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A Letter from Dr. Torrey to Amos Eaton.

In lieu of a biographical sketch this month the following extracts from a letter of Dr. John Torrey to Amos Eaton are given:

"DEAR FRIEND:—I send you a copy of the Constitution, etc., of our Society which we formed last winter. We are now in possession of our room in the New York Institution—we have already a considerable collection of minerals, plants, insects, etc. You may see an account of the Society in Bigelow Magazine. We meet once a week, have plenty of business, and I assure you we are in a *great* way. The resident members are mostly young men, and very zealous. Rafinesque, Knevely and myself were lately sent on an expedition to explore the Highlands, where we found some new species of plants. Rafinesque found two new fish. I have returned and left them there; they are going to explore the Shawangunk and Catskill mountains before they return. Send me every new thing you hear of relating to natural history, all your remarkable observations relating to the physiology of plants, etc. The Lyceum have resolved to publish a catalogue of the plants growing within thirty miles of New York. Rafinesque, Knevely and myself are a committee to carry it into effect. It was our intention at first to have given a *flora* with full descriptions, but found it a much greater labor than we expected, so have put it off till next spring—in the meantime the catalogue will appear.

"Send all your doubtful plants. I expect we can ascertain them among us, as we have several good botanists among us. Send particularly your grapes and ferns. Your *Sanguisorba media* is *Plantago Virginica!* I shall send you duplicates of all my new species that I have, with descriptions.

"Who understands the grapes and Cryptogamia best that you are acquainted with? Send me word, I should like to correspond and exchange with him.

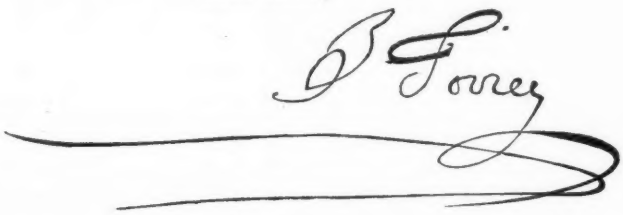
"Eddy and myself are now arranging his herbarium, which is in great confusion—the most of his plants he has not seen for several years. The whole he has deposited in the *Lyceum*. It contains many plants from the pine barrens of New Jersey, many from Georgia by Le Conte, some of which are new. Many of Pursh's new species were furnished him by Le Conte, Eddy, etc., for which he has not made any acknowledgement. Rafinesque discovered *Drosera filiformis* in 1802, and published it in 1811 in his *Precis des Decouvertes (?)*; this and many other species Pursh has stolen.

"The circular address of Rafinesque which I send you will give you some idea of his character. He is the the best *naturalist* I am acquainted with, but he is too fond of novelty. He finds too many new things. All is new! new! He has an opinion that there are no plants common to Europe and America. *Galium aparine* is *G. aparinoides*, Raf., etc., etc.

"I have lately had a great dispute with Raf. respecting Bolton's Fungi, whether it was of Halifax in Nova Scotia or England. He asserted that it was Halifax in England, and I as strongly denied it, but on referring to the copy in the Hosp. Library, I was obliged to give up. I believe you were as much mistaken as I was.

"I suppose you are tired of reading, so farewell.

"Your friend,



"P. S. We have received Elliott's Botany of Carolina and Georgia, as far as *Pentandria digyna*, 1 vol., 8vo. It contains full descriptions as far as it goes, and is the best book on American botany ever published. Tell me whether you want any subscriptions for your *Botany of the Northern States*; if you do I can get about sixty in the course of a week (I think). It would be a good time to publish it *now*, as you may [be] anticipated by some other botanist if you delay it till next summer. Eddy has proposed to me to publish with him a flora of one hundred miles around New York. We have together about 1,400 species, but

I do not think myself competent to join in so important a work. If I can render you any assistance by communicating to you descriptions or specimens of plants, I shall do it with the greatest pleasure."

REMARKS.—These extracts include all of the botanical matter of this letter. There is no date, but we can judge that from various allusions. The Lyceum of Natural History to which he refers was founded in 1820, I think, and this is a year after. Elliott's Botany was published (Vol. I.) in 1821. The letter is specially interesting as containing an opinion of Rafinesque by one of his contemporaries, and one who apparently knew him very well. "He is the best *naturalist* I am acquainted with," are the words, "but he is too fond of novelty. He finds too many new things—all is new! new!" a fault which is common to many even of our modern scientists, and for which Rafinesque ought not to be blamed any more than another.—JOS. T. JAMES.

Botany at the Minneapolis Meeting of the A. A. A. S.

This meeting was a memorable one for botanists, there being more in attendance than ever before, and for the first time botanical papers were in the majority in the section of biology. But, after all, the interest at such a time is not so much in the papers read as in the personal contact of the workers who may long have known of each other but never have met, and for whom the clasp of the hand and the glance of the eye cements a friendship already formed. At such times beginners meet with the leaders whose names are household words, and find them genial, hearty, whole-souled men, with a cheering word for all, and they return with fresh zeal to their work; at the same time these leaders have largely augmented their following. Botanical zeal ran so high that it finally culminated in the formation of an American Botanical Club, having no constitution or by-laws, but simply to be an association of botanists who are members of the A. A. A. S., for the purpose of general botanical conference and excursions during the meetings of the American Association. Prof. W. J. Beal was chosen President, and Prof. J. M. Coulter Secretary of this club, which expects to enter fairly on its work at the next meeting in Philadelphia. The members enrolled at Minneapolis are as follows: W. J. Beal, J. M Coulter, W. G. Farlow, C. E. Bessey, J. C. Arthur, W. R. Dudley, Dr. Geo. Vasey, Dr. E. L. Sturtevant, Lillie J. Martin, Mrs. Ellen B. Reed, Dr. P. R. Hoy, N. S. Townshend, Warren H. Manning, Sadie M. Manning, C.

V. Riley, Robert P. Bigelow, Jos. F. James, B. P. Colton, E. S. Bastin, S. A. Forbes, F. A. Gulley, Ellen E. Smith, Leander Stone, Mrs. Leander Stone, E. W. Claypole, W. R. Lazenby, W. M. Canby, J. W. Chickering, Edw. Pennock, John M. Holzinger, thirty in all, and from thirteen different States. A committee was appointed consisting of Profs. Coulter, Farlow and Bessey to consider the subject of domestic and foreign postage upon botanical specimens. This committee is instructed, by correspondence or otherwise, to obtain information as to grievances, and to send a remonstrance in the name of the association to the proper authorities. They expect to be able to present a favorable report at the Philadelphia meeting.

At a second meeting of the Club, Prof. E. S. Bastin, of the Chicago College of Pharmacy, read a paper entitled, "A fact bearing upon the evolution of the genus Cypripedium," which was followed by considerable discussion, chiefly upon teratological matters, in the course of which Prof. Bessey took occasion to express a very decided opinion about laying too much stress upon monstrosities. Dr. W. G. Farlow also gave an exceedingly interesting talk upon some of the common parasitic cryptogams which are most convenient and useful for class work, and many ideas were obtained which will blossom out in more than one laboratory this fall and winter.

At a third meeting of the Club, a committee was appointed to provide for meetings and excursions at Philadelphia next summer, and, as this city is a perfect nest of botanists, and within easy reach of many more, an outpouring of botanists is expected. With the rich collections of the Academy of Sciences, the famous ballast grounds, the New Jersey barrens, etc., there need be no lack of profitable excursions. The committee to perfect all these arrangements consists of Prof. J. C. Arthur, of Chicago, and J. H. Redfield, Esq., of Philadelphia, who have power to appoint a third member. At this same meeting W. M. Canby, Esq., was present, just returned from his northern boundary survey, where he was officially looking after grazing lands, but at the same time keeping his eyes open botanically. He gave the Club some account of the region traversed, and the characteristics of the vegetation, calling attention particularly to the commingling of Pacific coast and Rocky mountain forms as the mountains approach the British boundary.

Several small excursions were made, all of which resulted very profitably, but owing to the impossibility of arranging anything more than a few hours in advance, they were more slimly

attended than need be hereafter. Botanists should go to Philadelphia next year with specimens, queries and anything of botanical interest, as the Club will give abundant opportunity for informal discussions that could find no place in the regular sectional meetings of biology.

In regard to the botanical work done at Minneapolis during the sessions of the section of biology, the following account will give some idea. The papers are numbered in the order of their presentation, without any reference to their association numbers.

1. PROF. W. J. BEAL, as Vice President of Section F, gave the customary address at the opening of the sessions, showing the important relations existing between agriculture and botany. The address will speedily appear in full in *Science*.

2. DR. E. L STURTEVANT read a paper upon "Parallelism of structure of Maize and Sorghum Kernels," in which it was very clearly shown that what must be considered as three distinct species of corn have been produced artificially, the regions of chit, starch and corneous layer appearing quite constantly different in cross sections of flint, dent and pop-corn.

3. D. P. PENHALLOW presented a paper on the "Relation of root and leaf areas; Corn," which, in the author's absence, was read by abstract.

4. E. W. CLAYPOLE read a paper entitled "Note on the present condition of the Box Huckleberry, *Vaccinium brachycerum*, in Perry county, Penn." A very satisfactory conclusion to this paper was reached when the author stated that he had with him for distribution specimens of this very rare plant.

5. DR. E. L. STURTEVANT, speaking of "Influence of position on seed," showed by numerous experiments that in the case of corn, at least, position goes for a great deal.

6. DR. E. L. STURTEVANT, on "Agricultural Botany," struck out boldly in a new and very important field. He claimed that all fixed varieties of the agriculturist and horticulturist are fit subjects of classification, and that for convenience of identification they should be classified. Such arrangement, however, should not be made to coincide with ordinary botanical classification, for in the latter species are treated as the resultants of natural forces; but in order to produce the varieties of agriculture and horticulture an entirely new force comes into play, namely, the intelligence of man, and its results should be classified on a new basis. A scheme was hinted at, but not clearly defined; but enough was given to make it evident that the author had opened up a new world of labor, which it is for him now to

cultivate, and which will amply repay investigation in many more directions than agriculture and horticulture.

7. MISS M. E. MURTFELDT read a paper upon the "Periodicity of Sabbatia angularis," in which a period of seven years was made out, the explanation of which was in vain sought for.

8. PROF. W. R. DUDLEY presented a paper upon "An abnormal Orchid; *Habenaria hyperborea*." It seems that the author discovered many spikes of this species in which the flowers were spurless, which fact was abundantly testified to by the display of specimens.

9. PROF. W. R. DUDLEY also spoke of the "Origin of the Flora of the central New York lake region," giving it as his opinion that the origin of the flora of this very peculiar region must be looked for to the north and west.

10. PROF. JOHN M. COULTER read a paper upon the "Developement of the Dandelion Flower," which was an embryological study. The results obtained are noted elsewhere in this number.

11. PROF. W. J. BEAL spoke of the "Leaves of the Gramineæ with closed sheaths," bringing up several instances to illustrate the statement.

12. PROF. J. C. ARTHUR spoke of "A supposed poisonous seaweed in the lakes of Minnesota," a paper which probably excited greater local interest than any paper presented to the section. The summer before Prof. Arthur had received specimens of water from certain Minnesota lakes which seemed to be fatal to cattle drinking it. The specimens were found to contain an alga which is probably *Rivularia fluitans*. A visit to one of the lakes showed these minute balls occurring in vast quantities, forming a thick scum on the surface. Such masses exposed to the sun and decaying gave off an offensive odor, and in this condition were apparently fatal to cattle using the water. In two or three weeks the danger was past. If this be *Rivularia fluitans* it is its first discovery in America, though it is now found to be quite generally distributed in Minnesota lakes. Dr. Farlow, Prof. Arthur and the writer found an abundance of it in Lake Minnetonka. The author did not give it as his unqualified opinion that the plants were poisonous, but that they seemed so.

13. JOSEPH F. JAMES read a paper entitled "The position of Compositæ in the natural system," in which he very justly claimed for *Gamopetalæ* the most highly modified flowers, and among them *Compositæ* as of the highest rank.

14. PROF. E. S. BASTIN presented a paper entitled "A fact

bearing upon the evolution of the genus Cypripedium," in which he noted the discovery of a *Cypripedium* with an almost perfectly regular flower, and from its structure called attention to the probable morphology of the normally modified parts.

15. DR. W. G. FARLOW spoke upon "Some Algæ found in water supplies," in which an interesting account was given of the author's investigation of the water supply of Boston, the Nostocs with "cucumber taste" and those with "pig-pen odor," the dangers to be anticipated in using water from any lakes in general, and Minnesota lakes in particular, and the care necessary to avoid them. Incidental reference was also made to Prof. Arthur's discovery of *Rivularia fluitans* the year before.

16. DR. W. G. FARLOW also spoke upon "Certain parasitic Fungi," being an account of some of the most injurious species of the genus *Peronospora*.

17. C. RICHARDSON read before the Chemical Section a paper upon "Sotol, a Mexican forage plant." The plant in question is *Dasylirion Texanum*, and is used as a forage plant in Texas, sheep becoming very fond of it, and when using it can do without water for several weeks. A plain covered with it was described as looking like a field of cabbages.

It will be seen by this hasty summary that botany was well represented at Minneapolis, and it is the expectation that Philadelphia will witness a far greater gathering of botanists and botanical papers.—J. M. C.

GENERAL NOTES.

Aquilegia longissima is the name (for which, I believe, I am responsible) of a species discovered by Dr. Palmer, in Northern Mexico, and distributed in his collection. From Dr. Palmer's seeds plants were raised in the Botanic Garden here, and probably elsewhere. Its first blossoming seemed to be out of season, and abnormal; but it is now blossoming well, and if by no means the handsomest species of the genus, is the most extraordinary. It is just coming into blossom now, in the latter days of July, when its relative, *A. chrysantha*, has passed its prime. The spurs (from which it gets its name) are as much longer than those of *A. chrysantha* and *A. cærulea* as those are of the old-fashioned species. They are four inches long, and slender-filiform, even quite to their origin. The limb of the petals, which in *A. chrysantha* often nearly equals the sepals, and inclines to spread, is in this species about as widely spreading and almost as long as the narrower (lanceolate) sepals, elongated-spatulate in form, the orifice of the spur at its base, abrupt and barely a line in diameter. The flower, as in its relative, is erect or a little inclined; the straight spurs, with a manifest nectariferous knob at base. One would like to know what Lepidopterous insect it is that drains it.—A. GRAY.

Some Rhode Island Notes.—I have long been interested in local names of plants. Here are some Rhode Island names. Here, in Warwich, the *Celtis occidentalis* has the name of "Mining berry." *Hypericum Sarothra* is called "Louseweed," because the seed-pods crack between the fingers in a rather suggestive manner. In South Kingston I am told that the country people have corrupted *Rhododendron* into "Witch-of-Endor," showing what sound will do for philology.

I find ants visiting the cup-shaped glands at the bases of the leaves of *Cassia Chamæcrista*, which are nectar-secreting. Is there any reciprocal benefit?

W. W. BAILEY.

Mitella diphylla.—The flowers of *Mitella diphylla* are almost at right angles to the scape, and are arranged on the $\frac{2}{5}$ plan. But the fruiting specimens have a cup-shaped pod, which is always perfectly erect, bearing in its open cavity the seeds. In order to assume this erect position, since all the scapes are more or less slanting, the fleshy pedicels must take a one-sided arrangement, and on horizontal scapes this twisting of the pedicels places the pods again at right angles to the scape.—AUG. F. FOERSTE, *Dayton, O.*

Botanists and Botanizing at Minneapolis.—The meeting of the A. A. A. S. proved, as had been hoped it would, the largest and most interesting in the history of the Association in respect to the number and standing of the botanists in attendance, and the number and importance of the botanical papers presented. In truth, botany, for the first time took the lead in the biological section. If the reason be sought for this awakening of a long neglected interest it is found without difficulty. The botanical journals have had much to say during the last year about the richness of the flora in Minneapolis and vicinity. The knowledge of this fact was scarcely due to the kindling zeal of local collectors, for Minnesota possesses but a few workers, and these exchange or distribute little material, but is directly traceable to the Summer School of Science, founded by the University in 1881, and which has increased in interest and attendance each season since.

A distinctive feature of the botany given at this school has been the study of plants irrespective of the value of their classificatory characters, the illustrative examples being selected from all grades of vegetation, from the simplest unicellular seaweed to the most highly differentiated composite. The laboratory is the all-important adjunct of such a course, and in this instance the supply of material for it came entirely from the fields as it could be found by the instructor, or was brought in by the pupils. This scouring of highways and byways for all manner of vegetable growths led to a recognizance of the abundant occurrence of interesting plants, a discovery that attracted attention in other parts of the country, and resulted in a widespread desire to see and profit by it. The liberal policy of the College of Agriculture, in considering and following up with an investigation the reported poisoning of cattle by drinking lake scums directed special attention to the flora of the lakes. Couple these facts with the conviction, that had almost become general, that one would be likely to meet a large number of his fellow laborers at Minneap-

olis and enjoy the quickening influence of the exchange of opinions, and of social intercourse, and the increased attendance is accounted for.

A strong attempt was made to have excursions for the particular benefit of the botanists, but owing to the difficulty of learning the plans of the local committee in time to make corresponding arrangements, and duly notify those interested, the attendance upon such as were arranged was small, much to the regret of all concerned. Those who were so fortunate as to go, both specialists and general collectors, were enthusiastic over their success in obtaining desirable specimens.

This experience in conserving the interests of botanical members led to the conviction that to insure the best results there should be well-matured plans developed before the Association convenes, and which should be so arranged as not to conflict with other excursions or exercises. A committee was accordingly appointed to attend to the matter for the Philadelphia gathering of next year, when we may expect still larger attendance and more profitable herborizing.—J. C. A.

Chlorophyll corpuscles and Pigment bodies.—Every student of plant histology knows how impossible it is often to speak definitely with regard to cell contents. Attempts have been made to classify them, but only in well marked cases are they satisfactory. When any system finds its best exemplification only in exceptional cases it is time to look for another. Schimper, at Bonn, and Meyer, at Strassburg, have been working independently at certain phases of this problem, and have reached a more resonable conclusion than has ever been heretofore advanced. It looks as though the principal contents of cells, as varied as they appear, all have a common origin, that starch-formers, chlorophyll corpuscles and pigment bodies are related forms, sometimes even interchangeable, and are not produced in the protoplasm of the cell. This last statement is a regular iconoclast, for if we have ever taught anything with confidence about cell contents, it has been that we would have to look to protoplasm as the originator of most of them, that a chlorophyll corpuscle was nothing but colored protoplasm, that starch-formers were in some mysterious way born in protoplasm and chlorophyll, etc. But now those nameless little floating bodies, specks, needles, rods, etc., to which we have called no special attention, are all these things in various stages of formation, are called *plastidia* or *plastids*, and have existed from the very first in the plant, in the embryo itself, even in the embryo-sac and oösphere. Of course they are protoplasmic, are always present in meristems, and by the continuous growth and division of a few primitive *plastidia* the whole plant is supplied. This reduces the nomenclature of cell contents to a more uniform basis, but of course this common origin allows names to be applied rather to marked phases than to things which are specifically distinct, and allows every intermediate stage. Thus *leukoplasts* normally come from colorless *plastidia* in deep-seated cells, or may be from *chloroplasts*, or may under the action of light become *chloroplasts*, or may act as Schimper's *Stärkebildner*. *Chloroplasts* (chlorophyll copuscles) come normally from *plastidia* which are originally green, but they may come from *leukoplasts* exposed to the light, and often become *chromoplasts* (the pigment bodies). *Chrom-*

oplasts occur of all shades from carmine-red to greenish-yellow, but never blue. And so with chlorophyll corpuscles, pigment bodies, starch-formers and sundry other substances closely related, we may hope that we are approaching a natural classification of cell contents.—J. M. C.

The Genera Plantarum.—In the September *Am. Jour. Sci.* Dr. Gray reprints from the *Nation* a notice of the completion of Bentham and Hooker's *Genera Plantarum*. Begun in 1862 and finished this year, it stands as the second great botanical work of the century, the "Prodromus" of De Candolle being the other. Dr. Gray compares the various "Genera Plantarum" which have been published in the following interesting way:

"Some idea of the progressive enlargement of the field may be had by a comparison of the number of genera characterized in these successive works. The phænogamous genera of

Linnæus, "Gen. Pl.,"	ed. 1,	A. D. 1737,	were.....	887
" "	ed. 6,	A. D. 1764,	"	1189
Jussieu, "		A. D. 1789,	"	1707
Endlicher, "		A. D. 1843,	" (about).....	6400
Bentham & Hooker,		A. D. 1883,	"	7585

If the last had been elaborated upon the scale of Endlicher, or with the idea of genera which is still common if not prevalent, the number of genera would have amounted to at least ten thousand. An estimate of the number of known species of each genus and higher group has been made throughout the work—a rough approximation only, mentioning first the number in the books, and the number to which, in the opinion of the authors, these may probably be reduced by the botanists who adhere to the Linnæan view of species; from which it appears that, upon the very strictest estimate, their number, as now known to botanists, is at least 95,620. In round numbers, it may fairly be said that about 100,000 species of phænogamous plants are in the hands of botanists. The five largest orders, as well for genera as for species, are the following, and in this rank: Compositæ, Leguminosæ, Orchideæ, Rubiaceæ, Gramineæ. The high standing of the orchid family in the list will be a surprise to many. Linnæus knew only a hundred species; five thousand is now a moderate estimate —about half as many as there are of Compositæ, which hold to their proportion of one-tenth of the whole. In both families every country and district is largely peculiar in its species and types. The far greater prominence of Compositæ over orchids is owing to the vast number of individuals in the former, and their paucity in the latter."

Injurious Parasitic Plants.—It has become the fashion in certain quarters to decry the work done by the Department of Agriculture, but this is by no means politic or kind. The department is blessed with a maximum amount of ambition and a minimum amount of money, and it is hard to see how it could do more. Much good work has already been done, work that has yielded abundant returns in the better cultivation and preservation of various crops. C. V. Riley, in charge of the Entomological Commission, has well investigated the haunts and habits of various noxious insects, and the cost of these investigations has been but a trifle when compared with the damage to crops that has

been prevented. Such a work shows a very wise and far-sighted policy, and undertaken, as it has been, in the true scientific spirit, it has satisfied not only those immediately benefited, but entomologists as well. It is the densest stupidity which refuses the expenditure of hundreds to save thousands, or which looks for immediate practical results from the first appropriation. "Learn to labor and to wait" is not a part of the average legislator's policy, to whose mind results must be immediate or they are nothing. Now in the midst of all this good work that is being done by the department, and that has been so wisely provided for, why is it not seen that another great work is waiting to be done, a work that can not be entered upon too quickly? Noxious insects are not the only destroyers of crops, but hosts of injurious parasitic plants are spreading everywhere. We venture to say that loss from this source is as great as from insects. The habits of these injurious parasites have not been studied much in this country, but there are competent men who are working at them in a private way, but this is slow business when the country is in need. The rusts and smuts, and molds and rots, all need studying, and there could be no wiser appropriation of public money than to organize a commission for such investigation on the same basis as the Entomological Commission. The Department of Agriculture should make the move in this matter, and urge upon the next Congress the necessities of the case, backed by all the scientific and agricultural journals of the country. A laboratory for such investigations can be fitted up with very little outlay, and with unlimited opportunity for observing these parasites over large areas the results would undoubtedly be most satisfactory. There is some way of getting rid of these pests, and it can only be found by a careful study of their life histories. Usually they pass through different phases upon different hosts, and these hosts may sometimes be necessary to their further development. If then some host plant, which may be of no economic value, is acting as a carrier of these destructive parasites to some valuable crop, what incalculable importance it would be to know it! This is but the vaguest kind of intimation as to the direction in which practical results might speedily be reached. A commission for the study of injurious parasitic plants should now be the ambition not only of the Department of Agriculture, but of every botanist and agriculturist in the country.—J. M. C.

EDITORIAL NOTES.

PROFESSOR COULTER gave an account of the development of the dandelion flower before the A. A. A. S. at Minneapolis. His conclusions were: I. The inferior ovary is produced by an arrest in the development of the floral axis, the rising in a peripheral ring of the floral organs, and the gradual arching over of the cavity thus produced by the carpellary leaves; II. The syngenesious anthers are united by contact and pressure, but in no sense structurally: III. The ovule is not produced directly from the axis, but is an outgrowth from the surface (probably the mid rib) of a carpellary leaf. The paper opened up a number of incidental questions of much interest. It will appear shortly in the *American Naturalist*.

PERONOSPORA VITICOLA was found on *Ampelopsis* at Minneapolis by Dr. Farlow. The discovery is an important one in view of the strenuous efforts of European countries to prevent the spread of the disease. Our native *Ampelopsis* is almost as common in many cities of Europe as in this country, and specially observable in Geneva.

DR. J. D. TRASK, of Astoria, N. Y., has published an account of the poisoning of thirteen persons, belonging to several families, five of whom died, from eating unwholesome mushrooms. He is of the opinion (which to us does not seem likely) that many deaths occur annually from this cause. The trouble appears to come from confounding two poisonous white-gilled species of mushrooms, *Amanita phalloides* and *A. verna*, especially the former, with edible kinds. While a few poisonous species are to be avoided, there are, on the other hand, many kinds that may be eaten with impunity, and of these the most desirable—*Agaricus campestris*, the common mushroom with pink gills, *A. procerus*, one of the largest species of the genus, *Morchella esculenta*, the morell, and *Lycoperdon giganteum*, the great puff-ball—are so characteristic in appearance as to offer small opportunity for mistakes, and that only to the most careless observers.

A PAPER, by E. W. Claypole, on the occurrence of *Vaccinium brachycerum* in Pennsylvania, read before the Minneapolis A. A. A. S., will soon appear in the proceedings of the American Philosophical Society.

PROFESSOR HARVEY, of the Arkansas Industrial University, has distributed an excellent paper on the Forest Trees of Arkansas, reprinted from the *American Journal of Forestry*. It is a very full account of the arboreal flora, giving distribution and many notes of interest.

M. VESQUE claims that the histological characters of plants can be used for their systematic classification. It may be that the systematic classification of plants can be made more easily than the systematic classification of their tissues, but that there is endless confusion about the latter, every student of histology knows. Vesque depends on such structures as stomata, hairs, the fibro-vascular bundles, etc., and really shows that many natural groups can be made upon the basis of such characters.

THE TABLE OF CONTENTS and index for the first volume of *Science* are models of completeness and convenience.

IT SEEMS that atmospheric pressure must be counted as one influence on the growth of plants. Wieler, at Tübingen, has been experimenting, and finds that diminished atmospheric pressure induces more rapid growth, of course within certain limits. As Dr. Goodale remarks in *Science*, such investigations "may compel us to revise some notions now held in regard to the adaptation of plants to their surroundings in past ages, and at the present time upon high mountains."

PROF. WITTROCK has just published, in Stockholm, a "Snow and Ice Flora," which is included in Baron Nordenskjöld's studies in the extreme north, but is an exhaustive account of our knowledge of the subject. Forty-seven species are described, thirty-seven of which belong to the snow and ten to the ice. They

are almost entirely algæ of microscopic size and very low organization, mostly unicellular. The most prominent and most abundant of the plants is the famous "red snow," *Sphærella nivalis*, and next to it, and the only plant limited entirely to the ice flora, is a new species discovered by Nordenskjöld and Berggren and named *Ancylonema Nordenskjöldii*. This latter plant occurs in such abundance that it gives the ground a purple-brown color, and Baron Nordenskjöld thinks it has much to do with the melting of the ice.

IT NOW APPEARS that even the spermogonia of *Uredineæ* attract insects by a sweet secretion, and that doubtless the spermatia are carried away by them.

THE BULLETIN of the Buffalo Naturalists' Field Club continues in its fourth number a goodly number of interesting botanical notes, chiefly by David F. Day, Esq.

THE FIRST ANNUAL REPORT of the Ohio Agricultural Experiment Station is before us, and is full of matter interesting to botanists. The director, Prof. W. R. Lazenby, does his work in such a scientific spirit that we expect not only agriculture, but physiological botany to share in the results.

IN THE TWELFTH ANNUAL REPORT of the State Geologist for Indiana, just published, is a catalogue of the plants of the central-eastern part of the state, prepared by Dr. A. J. Phinney, of Muncie. The list is interesting in many respects, not the least of which is that it comes from the highest ground in the state and a region little visited by botanists.

WE ARE SURPRISED to learn, through a letter from De Bary to Dr. Farlow, that Dr. Engelmann is quite ill at Strassburg. He sailed from this country late in June.

TOO LATE FOR OUR last issue we learned that Poulson's Botanische Mikrochemie is being translated by Mr. Wm. Trelease, and what we "hoped" in the review was already being accomplished. We understand that Cassino is to publish it, and with a full realization that it is to be used in the laboratory. We bespeak for it a hearty reception into the botanical laboratories of this country.

A GREAT WORK is being done for botanists at the N. Y. Agricultural Experiment Station, under the direction of Dr. E. L. Sturtevant. A command of money and a most suggestive mind have made possible series of experiments upon a more extensive scale than ever attempted in this country before. Dr. Sturtevant, while keeping agriculture in the foreground, is quietly laying up an immense store of material for the philosophical botanist. He is bringing to bear upon plants every possible influence that can be made to affect their growth, and really he is seeing incipient species springing up under his own manipulation and can recognize the forces that are effecting the change. Many other experimenters in agriculture are seeing the same results, but very few have the acuteness to discern the causes. This work has but begun, but we look for it to become a source of unlimited material not only for the agriculturist but for the professional botanist. Already has Dr. Sturtevant intimated certain results which will completely overturn and tear up by the roots some of our preconceived notions, and one of these days we may look for something startling.

CURRENT LITERATURE.

Notes on some Species in the third and eleventh centuries of Ellis' North American Fungi, by W. G. Farlow. From Proc. Amer. Acad., XVIII, pp. 65–85.

This article is prefaced by an extended discussion on the proper selection of a name for the species where several stages or forms have been described as belonging to separate genera. To conform as nearly as possible to the general usage of systematists, it seems necessary to adopt the oldest specific name without regard to the stage for which it was used. This is tacitly admitted by the author who objects, however, to applying the rule to Uredineous plants, owing to the difficulty of identifying with certainty many forms named by the older mycologists. He therefore advocates the suppression of all æcidial names and of such uredo names as are of doubtful identity, thus confining the selection of the name to the teleutosporic forms and the unquestionable uredo forms. This is a commendable method on the score of accuracy, but it is to be feared will eventually fail of success owing to the tendency to revert to the more general usage, particularly as it is already adopted by Winter, the author of the most important contribution to the systematic treatment of *Uredineæ*, and other eminent German writers. The period of confusion in nomenclature should be passed as soon as possible, and an important factor in securing this end is uniformity of methods.

After giving a caution regarding the hasty grouping of æcidial forms with the supposed teleutosporic stages, the author proceeds to the annotation of nearly a fourth of the species of the two centuries. No. 1003 gives an *Æcidium* on *Anemone nemorosa* and on *Ranunculus abortivus* under the name of *Æ. Ranunculacearum* DC., both of which Dr. Farlow inclines to think distinct from the true *Æ. Ranunculacearum*. No. 277–8 *Cæoma luminatum* is referred to at length, and the suggestion made that it may be the æcidial stage of some *Phragmidium*. Nos. 247 and 248 are the forms of rust on *Rhus* known respectively as *Pileolaria brevipes* with depressed spores, which the Doctor holds to be the uredo form, and *Uredo Toxicodendri* with spirally marked ovate spores which he considers the teleutosporic form, although Winter has reversed them. These, he thinks, should not be separated from the genus *Uromyces*, and that the name to be adopted is *Urom. Toxicodendri* Berk. & Rav. No. 239, the *Uromyces* on *Spartina stricta*, described in Bulletin of Bussey Inst. II, 243, as a variety of *U. Junci*, is erected to a species and described as *Urom. Spartinæ*, Farlow. It has yet only been found at Wood's Holl, Mass. No. 240 is *Urom. Peckianus*, Farlow, on *Brizopyrum spicatum*, of which a description is given. It is closely related to *U. Dactylidis*, and ranges from Mass. to N. Jer. No. 1067 is a new species of *Uromyces* on *Melanthera hastata*, from Florida, of which a description is given as *Urom. Martinii* Farlow. No. 1068 was issued as the æcidial form of the last species under the same name, but as it is found to follow instead of precede the teleutosporic form, the assumption is considered hasty. No. 253, *Puccinia Lobeliæ*, Gerard, has priority, and is to be substituted as the name for *P. microsperma*, erroneously printed *P. microspora*. No. 257, *Puccinia aculeata*, should be superceded by *P. Podophylli*, Schw., an earlier name. No. 260, the *Puccinia* on *Proserpinaca*, is described as a distinct species, *P. Proserpinacæ*, Farlow, with the reservation that it may prove, upon examination, to be the same as that described by Vize, from California. The species is probably wide-spread, as it has been collected in Iowa. No. 1029, *Puccinia emaculata*, Schw., on *Panicum capillare*, is described. It is a species whose name has been a matter of uncertainty for a long time, being most often called *P. Graminis* var. *brevicarpa*, Peck, but the examination of Schweinitzian specimens now puts the matter at rest. No. 1051, the strange *Puccinia* on *Bouteloua curtipendula*, is not characterized, although the new name, *P. vexans*, Farlow, is used for it. It is so intimately associated with *Uromyces Brandegei* that the two occur in the same sorus, and the spores of the Uromyces resemble the single-celled spores of the *Puccinia* in all

respects, except that the former are papillate. Of course there is much probability that the two are variations of one species, as Dr. Farlow is inclined to think, although we prefer to keep them separate till more evidence is adduced, and do not see that the occurrence of the two forms of spores in the same sorus is a necessary proof of their genetic connection. No mention is made of the uredo on *Bouteloua* found in Iowa and described in the article on Iowa Uromyces in the Bull. Minn. Acad. Sci., vol. 2, which, although described as part of the *Uromyces*, may belong to either or both forms. So perplexing a case has not before appeared. No. 1052, *Puccinia Lantanæ* Farlow, from Bermuda, is described. This also has single-celled teleutospores.

The Grasses of the United States, being a synopsis of the Tribes and Genera, with descriptions of the genera, and a list of the species. By Dr. George Vasey, Botanist of the Department of Agriculture. Special Report—No. 63.

This, for the first time, gets together all our grasses, that we may look them in the face, and a goodly array they are, with 114 genera and 589 species. The author has long made a special study of the grasses, and this pamphlet is the result of much careful work and the promise of a work hereafter which will include specific descriptions. The object of the report seems to be specially to give those west of the Mississippi river a chance to name their grasses, and a commendable object it is, too, for botanists at the east have no conception of the "lost feeling" of the ordinary western botanist with all the botany of his region shut up in publications which are inaccessible to him. In this pamphlet the synopsis of the tribes and genera is chiefly a translation from Bentham and Hooker. Our large genera are as follows: *Panicum* 52 species, *Poa* 34, *Sporobolus* 26, *Paspalum*, *Aristida*, and *Muhlenbergia* each 23, *Stipa*, *Deyeuxia* (*Calamagrostis*) and *Eragrostis* each 20. Those genera with 10 species or more begin with *Agrostis* and *Bromus* each with 19, and then in order *Festuca*, *Andropogon*, *Bouteloua*, *Glyceria*, *Melica*, *Elymus*, and *Triodia*, under which last name it is hard to recognize *Tricuspis*. Of these species we note the author's name appended to no less than 30, six of which are in the genus *Poa*. It is yet hard to accustom ourselves to recognize *Deyeuxia* as our old *Calamagrostis*, or *Deschampsia* as the larger part of *Aira*, or *Agropyrum* as *Triticum* in part, or *Asprella* as *Gymnostichum*. It is a great pity that the government is so niggardly in the printing of such a pamphlet, for the typography and general "make-up" are very far from being what such work deserves. We understand that copies may be had upon application to Dr. Vasey.

Contributions to American Botany. XI. By Sereno Watson. I. List of Plants from S. W. Texas and N. Mexico, collected chiefly by Dr. E. Palmer, in 1879-80 (Gamopetalæ to Acotyledones). II. Descriptions of some new western species. Proc. Am. Acad. XVIII.

These annual contributions from the Botanic Gardens at Cambridge are always looked for with the greatest interest as containing the latest utterances of those who are best situated in this country to express an opinion in systematic botany. The principal part of the present contribution is devoted to a very interesting region, whose flora is comparatively unknown, and certainly very unusual. S. W. Texas and N. Mexico really share in that peculiar flora which has its beginning in S. Idaho, stretches through the Great Basin to Arizona and New Mexico, and so on to Texas and Mexico. Nearly fifty new species are described from Dr. Palmer's collection, and two new genera proposed. They both belong to the *Liliaceæ* and are named *Glyphosperma* and *Hemiphylacus*. The former belongs to Bentham's subtribe *Anthericeæ* and is "remarkable for the large colored stigmas, the peculiar filaments, the short dorsifixed anthers, the 1-nerved perianth segments, the pitted rugose seeds, and the terete fistulous leaves." The latter is intermediate between the *Chlorogaleæ* and the *Anthericeæ*, and is "characterized especially by the adnate filaments, only the inner and shorter ones antheriferous, and the scarious 1-nerved perianth-segments, in connection with the tuberous roots." Both were found near Saltillo. A synopsis

is also given of the genera and species of *Commelinaceæ* in the U. S., *Commelina* containing 5 species, *Tradescantia* 5, and *Tinantia* 1. The changes are that *C. Cayennensis* Rich. and *C. communis* of Chapman, become *C. nudiflora*, L.; *C. erecta* of Gray and Chapman is *C. hirtella*, Vahl., while *C. erecta*, L. still ranges from Penn. to Fla. An arrangement of the species of *Bouteloua* is also given, the 25 species being arranged under 4 sections, as proposed by Bentham. These sections are *Chondrosium* with 10 species, *Atheropogon* with 10; *Triathera* with 2, and *Polyodon* with 3. *B. Burkei*, Scribner, *B. Havardi*, Vasey, and *B. Texana*, Watson, are three species proposed as new. *B. curtipendula*, Torr. becomes *B. racemosa*, Lag. The Ferns are described by Prof. Eaton and among them are two new species of *Cheilanthes*. The Mosses were determined by the late Thos. P. James, and the very few lower cryptogams by Prof. Farlow.

In the second part, which occupies but five pages, are descriptions of some new western species, 19 in number, from Texas, New Mexico, Arizona, California and up the coast to Washington Territory.

Nouvelles Remarques sur la Nomenclature Botanique, par M. Alph. De Candolle. Genève, 1883.

This pamphlet of 80 pages contains discussions of subjects which have arisen since the author's publication, in 1867, of the "Lois de la nomenclature botanique," especial attention being devoted to Dall's report on "Nomenclature," etc., to the Nashville meeting of the A. A. A. S., in 1877; the report of M. Donvillé of the Geological Congress at Bologne, in 1881, upon the same subject; and the rules proposed by M. Chaper to the Zoölogical Society of France, in 1881.

The first part contains some observations and discussions upon various articles in the laws of 1867, the most important of which are concerning the point of departure for the law of priority, the citation of authors' names, both of species edited and inedited, and the names to be rejected or modified, and those which should be retained in spite of some defects.

The second part deals with new questions or those concerning which the Congress of 1867 was not specific, such as the nomenclature of organs, of fossils, of inferior groups or varieties, the use of capitals in the specific name.

The third and last part contains the text of the laws in full as adopted by the Congress, and indicates the proposed changes.

ARTICLES IN JOURNALS

ELLIS, J. B. & B. M. EVERHART.—New species of Fungi (6 species), *Torr. Bull.* 10. 76.

FARLOW, W. G.—Notes on some species in the third and eleventh centuries of Ellis' N. Am. Fungi, *Proc. Am. Acad.* 18. 65.

GRATACAP, L. P.—The growth of plants in acid solutions, I, *Am. Nat.* 17. 970.

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GRAY, ASA and J. H. TRUMBULL.—Review of De Candolle's Origin of Cultivated Plants, with Annotations upon certain American Species (concluded from page 255 of Vol. XXV.), *Am. Jour. Sci.* 3. 26. 128.

HILL, E. J.—Means of Plant Dispersion, *Am. Nat.* 17. 811.

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JONES, MARCUS E.—New plants from California, Nevada, etc., (6 species), *Am. Nat.* 17. 875 and 973.

MEEHAN, THOS.—Contraction of Vegetable Tissues under Frost, *Proc. Philad. Acad.* 1883. 74.

MEYER, A.—Review of his "Ueber Chlorophyll Körner, Stärkebildner und Farbkörper," by H. Marshall Ward, *Nature*, 28, 267.

MOHR, CHAS.—On Quercus Durandii, Buckley, *Proc. Philad. Acad.* 1883. 37.

NEWBERRY, J. S.—Notes on some Fossil Plants from Northern China, *Am. Jour. Sci.* 26. 123.

PECK, CHAS. H.—New species of Fungi (11 species), with plate, *Torr. Bull.* 10. 73.

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SCRIBNER, F. LAMSON.—List of Grasses from Wash. Terr. (1 new species, Glyceria Canbyi), *Torr. Bull.* 10. 77.

TRASK, J. D.—Cases of Mushroom Poisoning, *Am. Jour. Med. Sci.* April, 1883.

TRUMBULL, J. HAMMOND.—See under GRAY above.

WATSON, SERENO.—Contributions to N. Am. Botany, XI (60 new species), *Proc. Am. Acad.* 18. 96.

WITTROCK, V. B.—Review of his "Snow and Ice Flora," by Mary P. Merrifield, *Nature*, 28 1304.